Report

Follow-up Survey of Areas With Elevated Gamma Radiation Levels (Uranium Energy Corporation, Permit 123, Weesatche Project)

Prepared by

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August 30, 2007

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(Uranium Energy Corporation Permit 123, Weesatche Project)

Summary

A follow-up gamma radiation survey was conducted over the mud pit/borehole areas with previously measured elevated gamma radiation levels, after remediation work required by a Notice of Violation (NOV) was completed by Uranium Energy Corporation (UEC). The objective of this survey was to determine the gamma radiation levels for areas surrounding the twenty-two boreholes that were found to have elevated gamma radiation levels (values over 7 micro-Roentgen/hour [micro-R/hr]) during the radiation survey conducted in March 2007. The perimeters of the follow-up survey areas were delineated with a 25-foot buffer around all locations exhibiting radiation between 8 and 11 micro-R/hr. The recently collected data indicate that the gamma radiation for the majority of the boreholes was reduced to background levels as a result of UEC's remediation work. Two small areas had a range of radiation levels that were similar to those measured during the pre-remediation survey.

Background Information

Previous Survey

- Gamma radiation data were collected on March 7th, 8th, and 9th, 2007.
- The initial radiation survey was limited to any of the 202 borehole and associated mud pit locations that were provided to the Surface Mining and Reclamation Division by UEC. These were the boreholes that had been drilled between May 2006 and February 2007.
- I obtained measurements for the mud pits and surrounding, undisturbed areas, for approximately 132 boreholes (65% of boreholes).
- The background (ambient) gamma radiation estimate ranged from 4 to 7 micro-R/hr at a 1-meter height, with 88% of the observations ranging from 5 to 6 micro-R/hr.
- The gamma radiation associated with boreholes and mud pit disturbance areas ranged from 4 to 11 micro-R/hr. All of the radiation observations above 7 micro-R/hr were recorded near the boreholes and mud pit disturbances; however, only a small proportion (22 of 132, or 17%) of the surveyed boreholes/mud pits exhibited the higher radiation levels.

Termination of Notice of Violation

- Remedial action required under Notice of Violation (NOV) 080A required the permittee to install a concrete surface plug, mark the exact location of each borehole, and remove all drilling mud, cuttings, cement, and other debris and burying it with no less than one foot of topsoil.
- Remediation work was inspected on June 18, 2007 and, as a result of the inspection, the NOV was terminated.

Follow-up Survey Methods

General Design of Survey

My main objective was to survey the twenty-two areas surrounding the boreholes that exhibited elevated gamma radiation levels during the survey conducted in March 2007. The affected areas

were delineated using GIS (Geographic Information System) software, by establishing a 25-foot buffer around all locations that had radiation levels between 8 and 11 micro-R/hr. The follow-up survey was conducted in a similar manner to the March 2007 survey: I walked over the 22 areas, stopping to record gamma radiation measurements at regular intervals or when the meter readings changed. On average, I recorded a radiation measurement every 3 to 25 feet, depending on the radiation level fluctuation. Measurements were made 1 meter above the ground surface. All measurement locations and meter readings were recorded with global positioning system (GPS) equipment.

Equipment Used

- Ludlum 12S MicroR meter (1" × 1" sodium iodide scintillator); measures gamma radiation; calibrated on February 13, 2007.
- Trimble ProXRS GPS Receiver with TSC1 data collector, using satellite corrections to provide differential GPS (DGPS) capabilities and sub-meter accuracy.

Survey Details

- Gamma radiation data were collected on August 23, 2007.
- The radiation survey was limited to the 22 areas that had previously exhibited elevated gamma radiation levels.

Follow-up Survey Results

All of the point data collected during the radiation survey were downloaded from the GPS and added to a GIS (geographic information system) map. The radiation data were not evaluated statistically, as the locations and density of measurements were slightly different for both surveys. However, a comparison was made of the range of gamma radiation values before and after UEC's NOV remediation work.

- 626 gamma radiation measurements were collected (see Figure 1).

- Most of the observations (94%) were similar to the estimated background (ambient) gamma radiation levels (4 to 7 micro-R/hr).

- Twenty of the 22 areas had reduced radiation levels after the NOV remediation work was completed (see Table 1).

- Two small areas (approximately 967 square feet, total) associated with two boreholes (RBLA-3 and RBLD-5) had a range of radiation levels that were similar (maximum values above 7 micro-R/hr) to those measured during the pre-remediation survey.

Table 1. 22 areas where elevated gamma radiation levels were observed in March 2007.

Date Drilled	Borehole Location	Driller	Pre-Remediation Radiation Survey micro-R/hr Range	Post-Remediation Radiation Survey micro-R/hr Range
5/18/2006	30892-85c	Triple C	6 to 11	5 to 7
5/24/2006	30892-86c	Triple C	7 to 11	5 to 8
7/18/2006	32206-11	Klufa	6 to 10	5 to 7
10/27/2006	30892-98	Quick Mud	6 to 8	6
10/31/2006	30892-99	Quick Mud	6 to 8	5 to 6
10/31/2006	30892-103	Quick Mud	5 to 8	5 to 6
11/1/2006	30892-117	MHC	5 to 8	5 to 7
11/2/2006	30892-112	Quick Mud	5 to 9	5 to 6
11/3/2006	30892-116	MHC	5 to 8	5 to 7
11/6/2006	30892-113	Quick Mud	6 to 8	5 to 6
11/6/2006	30892-115	Quick Mud	5 to 8	5 to 7
11/6/2006	30892-106	MHC	5 to 8	5 to 6
11/7/2006	30892-114	MHC	5 to 9	5 to 6
11/7/2006	32202-96	MHC	7 to 8	5 to 6
11/15/2006	32202-117	Quick Mud	5 to 11	5 to 6
11/15/2006	32202-99	MHC	5 to 8	5 to 7
12/8/2006	RBLA-3	MHC	5 to 11	5 to 10
12/12/2006	32201-N2	Quick Mud	5 to 8	5 to 6
12/13/2006	RBLD-5	MHC	5 to 11	5 to 10
12/15/2006	32201-N5	Quick Mud	7 to 8	5 to 6
1/11/2007	30892-85AC	MHC	6 to 11	5 to 7
2/6/2007	32201-N70	Quick Mud	6 to 9	5 to 6

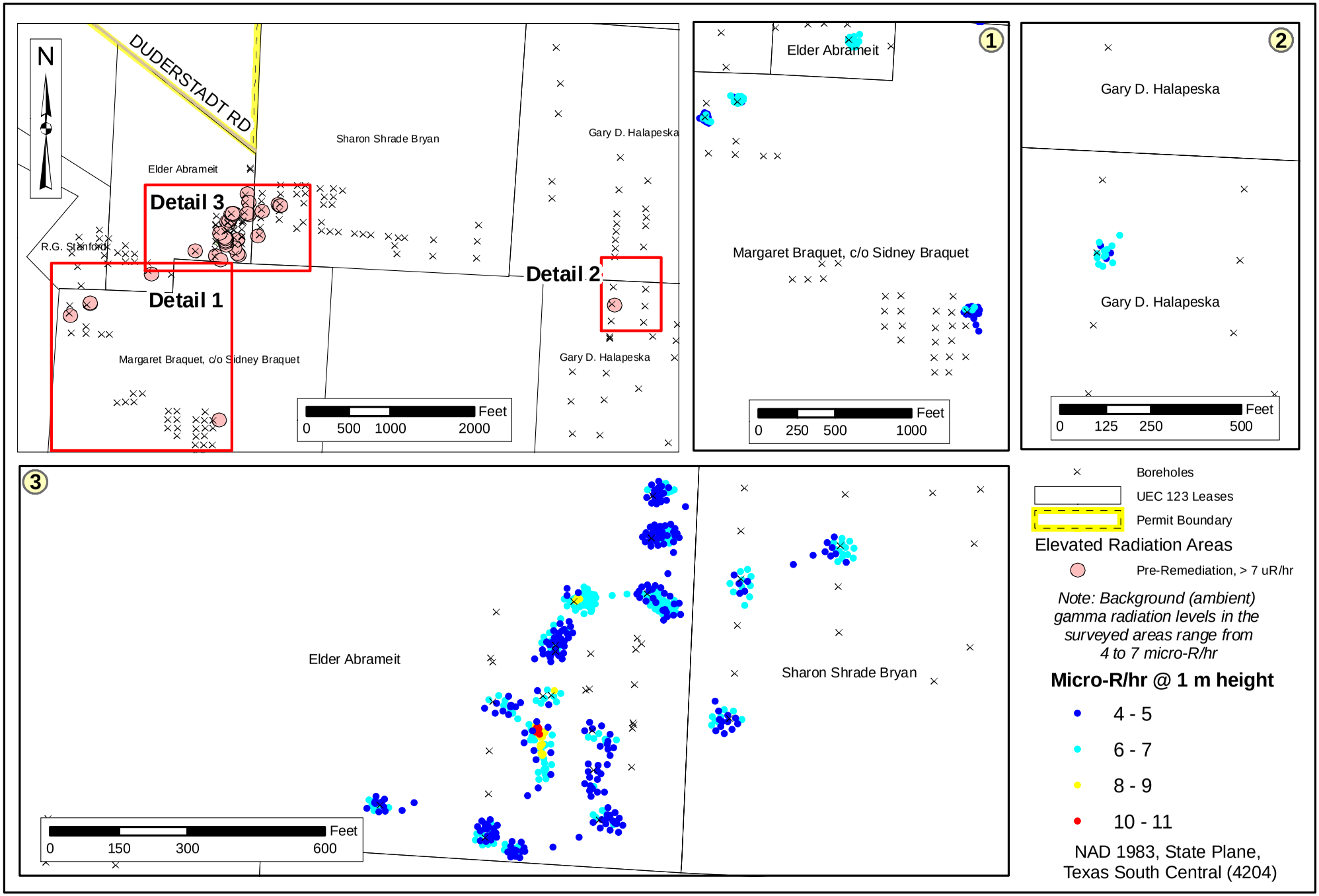

Figure 1. Gamma Radiation Survey After Remediation.
(Uranium Energy Corporation Permit 123, Weesatche Project)

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August 30, 2007